

Soil Best Management Practices in the New Washington State Stormwater Manual and Their Impact on the Landscape Industry

Upcoming Regulation of Soil Quality in New Landscapes

The 2001 update of Washington State's Stormwater Management Guidelines includes a Best Management Practice (BMP) calling for minimum "Post-Construction Soil Quality and Depth." Over the next 2-3 years most King County municipalities must incorporate these practices into codes and regulations, as part of stormwater management plans required by National Pollution Discharge Elimination System (NPDES) permits. Local governments will decide many of the details of what soil improvements will be required for specific landscape situations, and how they will be verified and enforced.

Likely Requirements of Washington State "Post-Construction Soil Quality And Depth" Stormwater BMP (from current draft of *Washington State Stormwater Management Manual for Western Washington* – Washington State Department of Ecology)

- **Soil retention.** The duff layer and native topsoil shall be retained in an undisturbed state to the maximum extent practicable. In any areas requiring grading, the duff layer and topsoil shall be removed and stockpiled on site to be reapplied to other portions of the site where feasible.
- **Soil quality.** All cleared and graded areas not covered by impervious surface, incorporated into a drainage facility or engineered as structural fill or slope shall demonstrate the following:
 1. The moisture infiltration rate and soil moisture holding capacity of the original undisturbed soil native to the site shall be retained or enhanced. Areas which have been compacted, or where duff or underlying top soil has been removed shall be amended to mitigate for lost moisture infiltration and moisture holding capacity.
 2. A topsoil layer shall be present with a minimum depth of eight inches, a minimum organic matter content of ten percent dry weight, and a pH from 6.0 to 8.0, or matching the pH of the original undisturbed soil. The resulting soil should be conducive to the type of vegetation to be established.
 3. Subsoils shall be scarified at least 4 inches below the topsoil layer with some incorporation of the upper material where feasible.
- **Maintenance**
 1. Soil shall be protected from compaction, planted after installation, and mulched after planting.
 2. Plant debris or its equivalent shall be left on the soil surface to replenish organic matter.

Municipalities Will Determine How Soil Quality BMPs Are Implemented

The State BMP purposely leaves many implementation details to local governments. Important decisions to be made locally include:

- What depth, organic matter content and nutrient levels will be deemed "conductive to the type of vegetation to be established", including turf, native plantings, and different types of ornamentals?
- What type and depth of mulches will be required?
- What and how much "plant debris or its equivalent should be left on the soil surface"?
- How will compliance be verified? What tests or documentation will be required? How will disputes be resolved?

How the Green Industry, Developers and Seattle Public Utilities Can Collaborate

The details of how soil quality requirements are implemented will have a profound impact on how developers, the Green Industry and regulators operate. In order for regulations to be effective, they must be clear, fair, scientifically based and enforceable. Seattle Public Utilities is initiating collaboration with industry to facilitate effective and mutually beneficial implementation. Steps may include:

- Dialogue and cooperative research on optimal soil improvement methods and rates for various plantings and site conditions; and convenient, cost effective ways to verify compliance with regulations
- Development of standard prescribed specifications to use in place of performance standards in situations where site specific solutions are too burdensome or untimely
- Development of educational programs and materials for landscape contractors, design and specification professionals, public -agency staff including inspectors, and consumers
- Creation of incentives or recognition awards to encourage innovative ways to meet the requirements

Background Issues

Rapid urbanization in the Puget Sound region has resulted in widespread conversion of valuable forest and agricultural soils to impermeable surfaces. In addition, typical development practices leave soils in landscaped areas with greatly diminished horticultural and hydrological functionality. In the course of development topsoil is often stripped of critical organic horizons, compacted, buried under subsoil, or removed and replaced with shallower depths of lower quality imported soil. Soil conversion and degradation have significant environmental and economic costs.

The benefits of soil functions are not typically included when landscape projects are budgeted. The result is that competitive bidding often pushes projects toward lowest-cost, minimum-quality soil preparation. Beyond the environmental and economic impacts of poor soil preparation, this is an issue of fairness to consumers—and to responsible landscape contractors who are pushed to skimp on soil preparation in order to compete.

Environmental Benefits of Healthy Soil

There is a growing awareness of the environmental functions of healthy soil, and its impact on a variety of environmental and resource issues. The Green Industry, along with farmers, home gardeners, and policy makers have a greater understanding of the role healthy soils play in:

- Absorbing storm water, reducing peak runoff and the resulting erosion,
- Filtering out sediment and chemical contaminants from runoff and groundwater infiltration,
- Reducing irrigation needs by improving moisture absorption and retention,
- Reducing fertilizer and pesticide requirements—and the potential for these compounds to run off into surface water or leach into groundwater.
- Purifying and cooling urban air by growing vigorous plants.

These benefits are self-amplified— vigorous plants grown on healthy soils provide cover that protects the soil from erosion and compaction. They also moderate microclimates for improved growth of other plants.

Economic Values of Healthy Soil

The environmental benefits provided by healthy soil result in substantial economic values to individuals, taxpayers and communities. Economic benefits from healthy soil functioning include:

- Healthy landscapes add value to properties and neighborhoods.
- Vigorous plants enhance landscape contractors reputation, and reduce callbacks for problems.
- Reduced irrigation needs provide immediate savings to customers on their water bills.
- Reduced irrigation requirements allow utilities to avoid expenditures on water supply and storage infrastructure, and the resulting increases in water rates.
- Reduced storm runoff minimizes the need for costly collection and treatment facilities.
- Reduced pesticide use cuts the need for expensive hazardous waste disposal, paid for by all utility customers.
- Improved water quality and reduced erosion aid the recovery of endangered Puget Sound salmon species, and may eliminate the need for more costly measures.